

Amendments to the Specification:

[0001] This Application is a Continuation of U.S. Patent Application Serial No. 09/041,901, filed March 13, 1998 and ~~now pending~~, now U.S. Patent No. 6,350,319, and incorporated herein by reference.

[0023] The workpiece housing 20 of the embodiment of Fig. 1 defines a substantially closed processing chamber 50. Preferably, the substantially closed processing chamber 50 is formed in the general shape of the workpiece 55 and closely conforms with the surfaces of the workpiece. The specific construction of Fig. 1 includes an upper chamber member 60 having an interior chamber face 65. The upper chamber member 60 includes a centrally disposed fluid inlet opening 70 in the interior chamber face 65. The specific construction also includes a lower chamber member 75 having, an interior chamber face 80. The lower chamber member 75 has a centrally disposed fluid inlet opening 85 in the interior chamber face 80. The upper chamber member 60 and the lower chamber member 75 engage one another to define the processing chamber 50. The upper chamber member 60 includes sidewalls 90 that project downward from the interior chamber face 65. One or more outlets 100 are disposed at the peripheral regions of the processing chamber 50 through the sidewalls 90 to allow fluid within the chamber 50 to exit therefrom through ~~centripetal acceleration~~ centrifugal force that is generated when the housing 20 is rotated about axis 47.

[0027] During processing, one or more processing fluids are individually or concurrently supplied through fluid supply tubes 115 and 125 and inlets 70 and 85 for contact with the surfaces of the workpiece 55 in the chamber 50. Preferably, the housing 20 is rotated about axis 47 by the rotor portion 15 during processing to generate a continuous flow of any fluid within the chamber 50 across the surfaces of the workpiece 55 through the action of ~~centripetal~~ centrifugal acceleration. Processing fluid entering the inlet openings 70 and 85 are thus driven across the workpiece surfaces in a direction radially outward from the center of the workpiece 55 to the exterior perimeter of the workpiece 55. At the exterior perimeter of the workpiece 55, any spent processing fluid is directed to exit the chamber 50 through outlets 100 as a result of the ~~centripetal~~ centrifugal acceleration. Spent processing fluids may be accumulated in a cup reservoir disposed below and/or about the workpiece housing 20. As will be set forth below in an alternative embodiment, the peripheral regions of the workpiece housing 20 may be constructed to effectively separate the processing fluids provided through inlet 70 from the processing fluids supplied through inlet 85 so that opposite surfaces of wafer 55 are processed using different processing fluids. In such an arrangement, the processing fluids may be separately accumulated at the peripheral regions of the housing 20 for disposal or re circulation.

[0039] It is in the closed state of Figs. 7A and 7B that processing of the wafer 55 takes place. With the wafer secured within the processing chamber 310, processing fluid is provided through passageway 415 of shaft 260 and inlet 220 into the interior of chamber 310. Similarly, processing fluid is also provided to the chamber 310 through a processing supply tube 125 that directs fluid flow through inlet 230. As the reactor 200 is rotated by the rotary drive motor assembly 410, any processing fluid supplied through inlets 220 and 230 is driven across the surfaces of the wafer 55 by forces generated through ~~centripetal~~ centrifugal acceleration. Spent processing fluid exits the processing chamber 310 from the outlets at the peripheral regions of the reactor 200 formed by notches 295 and 296. Such outlets exist since the support members 240 are not constructed to significantly obstruct the resulting fluid flow. Alternatively, or in addition, further outlets may be provided at the peripheral regions.

[0044] In operation of the embodiment shown in Fig. 10, processing fluid is provided through supply line 587 to the sump 585 while the reactor 200 is spinning. Once the sump 585 is full, the fluid flow to the sump through supply line 587 is eliminated. ~~Centripetal acceleration~~ Centrifugal force resulting from the spinning of the reactor 200 provides a pressure differential that drives the fluid through openings 597 and 230, into chamber 310 to contact at least the lower surface of the wafer 55, and exit outlets 100 where the fluid is re circulated to the sump 585 for further use.